Claim Objections

The Office Action objects to claims 19 and 20. The objection states that "the pre-boot code resides on the hard drive according to claim 17" and that "the redirected floppy I/O is redirected I/O from the hard drive." There was apparently some confusion in the Examiner's mind as to the location(s) of the pre-boot code. However, one of skill would understand that the pre-boot code is read from the file into RAM, as stated at lines 7-8 of claim 17, and then read from RAM by redirection, as stated in claim 19. No change to claim 19 is needed.

As for claim 20, one of skill would understand that the pre-boot code is read "from the file" as claimed, without necessarily being read from RAM by redirection. No change to claim 20 is needed.

The Matthews-Stückelberg Combination Lacks the Required Motivation

The primary combination of references on which the new rejections rely is not justified. The combination is driven by the Examiner's hindsight, not by the motivations of those skilled in the art at the time of invention. The faulty combination in question, on which all of the rejections rely fully or in critical part, is the combination of "Matthews" (U.S. Patent No. 6101601) with "Stu" (Stückelberg et al., "Linux Remote-Boot mini-HOWTO").

The Standard for Combining References Under Section 103

To establish a *prima facie* case of obviousness, the Office must show some suggestion or motivation, either in these references themselves or in the knowledge generally available to one of ordinary skill in the art, to combine the references' respective teachings. *M.P.E.P.* § 2142.

The prima facie case must be based on *evidence*, not on unsupported statements. *See, e.g., C.R. Bard, Inc. v. M3 Sys., Inc.*, 157 F.3d 1340, 1352 (Fed. Cir. 1998) (describing "teaching or suggestion or motivation [to combine]" as an "essential evidentiary component of an obviousness holding"); *In re Rouffet*, 149 F.3d 1350, 1359 (Fed. Cir. 1998) ("the Board must identify specifically . . . the reasons one of ordinary skill in the art would have been motivated to select

the references and combine them"); *In re Fritch*, 972 F.2d 1260, 1265 (Fed. Cir. 1992) (examiner can satisfy burden of obviousness in light of combination "only by showing some objective teaching [leading to the combination]"); *In re Fine*, 837 F.2d 1071, 1075 (Fed. Cir. 1988) (evidence of teaching or suggestion "essential" to avoid hindsight); *Ashland Oil, Inc. v. Delta Resins & Refractories, Inc.*, 776 F.2d 281, 297 (Fed. Cir. 1985) (district court's conclusion of obviousness was error when it "did not elucidate any factual teachings, suggestions or incentives from this prior art that showed the propriety of combination"). *See also Graham v. John Deere Co.*, 383 U.S. 1, 18 (1966) ("strict observance" of factual predicates to obviousness conclusion required). Combining prior art references without evidence of such a suggestion, teaching, or motivation simply takes the inventor's disclosure as a blueprint for piecing together the prior art to defeat patentability – the essence of hindsight. *See, e.g., Interconnect Planning Corp. v. Feil*, 774 F.2d 1132, 1138 (Fed. Cir. 1985) ("The invention must be viewed not with the blueprint drawn by the inventor, but in the state of the art that existed at the time.").

The Office Action's Stated Basis for Combining the References

The present Office Action asserts the following on page 3 as its only basis for combining Matthews with Stu:

> It would have been obvious to one of ordinary skill in the art to perform the redirecting steps taught in Stu to perform the retrieving and reading in the Matthews system because Stu teaches in detail how a system is booted from an image file. Furthermore, even though Stu details booting remotely, Matthews teaches that remote booting can also occur locally by storing the image on the system [col. 4 lines 64-67].

The portion of Stu relied on is on page 42. On that page, the following paragraph under the heading "LoadRamDisk 'ramdisk-filename'" was highlighted, presumably by the Examiner:

> Load a floppy disk image into the extended memory and redirect the BIOS Disk Services to make floppy disk calls use this image instead. This command implicitly calls `HideBootProm`. Call `FloppyBoot` to boot on the ramdisk you just loaded.

The cited portions of Matthews are Figure 5, column 5 line 60 through column 6 line 11, and column 4 lines 64-67. In context, the column 4 cite teaches that after a network computer 310 downloads a remote boot image from a server, an image 314 can be made, that the image

314 may be used to restart the computer, and that the image 314 can be stored on a disk attached directly to the network computer 310. In context, the column 5 cite and Figure 5 teach that a network computer can be booted locally or booted using an operating system downloaded to the computer over the network.

The cited portions of Matthews do not teach redirecting I/O. Indeed, a keyword search of Matthews finds no references to redirection of I/O, or to device emulation. A keyword search of Matthews also finds no reference to RAM disks. Consistent with this, the Office Action asserts as noted above that it would have been obvious to use Stu's I/O redirection to a RAM disk to perform reading and retrieving in the Matthews system.

Why the Combination Would Not Have Been Obvious: No Motivation

Even if we momentarily assume for the sake of argument that Stu's few paragraphs on page 42 teach the I/O redirection that is claimed and described for page after page in the present application, one of skill would not have brought Stu's *remote* booting into Matthew's *local* booting process, because Matthew's own remote booting process was close at hand. At most, one of skill would have combined Stu's *remote* booting with Matthew's *remote* booting. Even that combination, however, fails to teach the present invention's *local* pre-booting advances.

Matthews provides a remote booting process, as indicated for instance by components 504, 510, 516, 518, 520, and 522 of Matthews Figure 5. Stu's teachings are also directed to remote booting, as the Office Action concedes in the quote above. In particular, Stu's discussion of LoadRamDisk presumes remote booting. The discussion of LoadRamDisk occurs in a section of Stu that begins:

> 5. Remote-Boot Tools Reference Manual
> This section provides detailed informations on the use of the tools we developped at the CUI, University of Geneva for this remote-boot configuration.

The focus on remote booting is present throughout Stu, beginning with the title's reference to "Remote-Boot". To paraphrase the Office Action, "Stu teaches in detail how a system is remotely booted from an image file." Accordingly, one of skill would have combined Stu with

Matthews, if at all, by combining the *remote* boot teachings of Stu with the *remote* boot teachings of Matthews.

Further evidence is available if we look beyond Matthews and Stu to the knowledge and practice of those skilled in the art. The postings attached to this Response as Exhibit A show that people of skill in the art would understand LoadRamDisk to concern *remote* booting. The Mettler posting to newsgroup ch.com.os.linux, for instance, describes the Stu reference as a server-based configuration using the network protocol TCP/IP. Remote booting uses a server with which a client communicates using a network protocol. The Metz posting to the BpPatch Forum refers to a "remote file" and sets $CacheNever = ON, which page 30 of Stu suggests be done for diskless boots. Diskless boots are remote boots. The Ian posting to LinuxQuestions.org likewise presumes a diskless system. The Vic posting to the BpPatch Forum also sets cachenever = ON. The Will posting to the BpPatch Forum refers to downloading an image from a server.

Note also that several of the postings indicate that LoadRamDisk is not working properly, is difficult to use, or both. Indeed, the Vic posting states "to be honest LoadRamDisk and LoadZRamDisk never worked successfully for me ever." Such difficulties would make persons of skill less likely to use LoadRamDisk for its intended purpose in remote booting, much less to use it for some other purpose such as local booting.

The Combination Relied on by the Office Action Would Not Be Made

One of skill considering Matthews and Stu would be focused on remote booting, not on local booting. Even if one of skill wanted – for some reason not yet shown – to combine Stu with Matthews, the natural way to combine them is to combine Stu's *remote* boot teachings with Matthews' *remote* boot teachings, which does not teach the present invention's *local* limitations. One of skill would understand that Stu's LoadRamDisk was intended for use in remote booting, and would also understand that even in that intended use it might not operate as desired.

In short, one of skill who did not have the present application's claims to use as a blueprint would have had no reason to pluck a difficult-to-use LoadRamDisk remote boot procedure out of its obscure location in Stu and put it to a local boot use for which it was

not intended. The combination of Matthews and Stu does not meet the legal requirements of Section 103 and the obviousness case law. All rejections should be withdrawn.

Claim 1

Claim 1 was rejected under Section 103 in view of the Matthews-Stu combination. As explained above, that combination is not properly motivated. Moreover, even if it had been properly made, the Matthews-Stu combination teaches *remote* booting, not the claimed *local* methods, systems, and configured media. The rejection should be withdrawn.

Claim 2

Claim 2 was rejected under Section 103 in view of the Matthews-Stu combination plus Bertram (U.S. Patent No. 5261104). As explained above, the combination of Matthews with Stu is not properly motivated; for at least that reason, the rejection should be withdrawn.

The addition of Bertram is also improperly motivated. The only basis given for including Bertram is that "Bertram explicitly teaches that it is beneficial to a user to have the ability to boot alternate operating systems if desired." Office Action at page 5, paragraph 16. But this is not evidence that one of skill looking at Bertram would have been motivated to specifically consider Matthews, or Stu, or vice versa. Indeed, a keyword search of Bertram shows no use of "net" or "remote" or "diskless". Stu is focused on remote boots; Bertram apparently does not even mention them. In combination with Stu, Matthews likewise pertains primarily to remote booting. The advantage cited by the Office Action is one merely recited in the claims and in Bertram. It is not a suggestion or motivation in the art for combining Bertram with the other references. The combination of Bertram with Matthews and Stu is not properly motivated. The rejection should be withdrawn.

Claim 3

Claim 3 was rejected under Section 103 in view of the Matthews-Stu combination. As explained above, that combination is not properly motivated, and it teaches *remote* booting, not the claimed *local* innovations. The rejection should be withdrawn.

Claim 4

Claim 4 was rejected under Section 103 in view of the Matthews-Stu combination. As explained above, that combination is not properly motivated, and it teaches *remote* booting, not the claimed *local* innovations. The rejection should be withdrawn.

The Office Action asserts that booting from a floppy is substantially the same as flashing a BIOS. The undersigned disagrees. Pursuant to M.P.E.P. § 2144.03, the Office Action's reliance on alleged common knowledge is hereby challenged. The Office must either withdraw the rejection or else support it with adequate evidence.

Claim 5

Claim 5 was rejected under Section 103 in view of the Matthews-Stu combination plus Kwan (U.S. Patent No. 6415382). As explained above, the Matthews-Stu combination is not properly motivated, and it teaches *remote* booting, not the claimed *local* innovations. The rejection should be withdrawn.

The addition of Kwan is also improperly motivated. The only basis given for including Kwan is that "the boot failure detection means" of Kwan would make the Matthews-Stu system "more reliable and robust." Office Action at page 6, paragraph 23. But this is not evidence that one of skill looking at Kwan would have been motivated to specifically consider Matthews, or Stu, or vice versa. It is not a suggestion or motivation in the art for combining Kwan with those particular references. Indeed, Kwan teaches redirecting the boot process from one hard disk to another hard disk. Kwan Abstract. The Office Action fails to explain how this reliance on two disks could be operably combined with the remote booting of Matthews and Stu, much less how that combination would teach the local booting in claim 5. The rejection should be withdrawn.

Claim 7

Claim 7 was rejected under Section 103 in view of the Matthews-Stu combination. As explained above, that combination is not properly motivated, and it teaches *remote* booting, not the claimed *local* innovations. The rejection should be withdrawn.

Claim 8

Claim 8 was rejected under Section 103 in view of the Matthews-Stu combination. As explained above, that combination is not properly motivated, and it teaches *remote* booting, not the claimed *local* innovations. The rejection should be withdrawn.

The Office Action contends that use of a memory manager in the context of this claim would have been obvious. The undersigned disagrees. The Office Action also contends that loading an image before other code allocates memory would have been obvious; the undersigned also disagrees with this contention. Pursuant to M.P.E.P. § 2144.03, the Office Action's reliance on alleged common knowledge is hereby challenged. The Office must either withdraw the rejection or else support it with adequate evidence establishing each of these two contentions.

Claim 9

Claim 9 was rejected under Section 103 in view of the Matthews-Stu combination. As explained above, that combination is not properly motivated, and it teaches *remote* booting, not the claimed *local* innovations. The rejection should be withdrawn.

The Office Action groups claim 9 with claim 10. However, these claims are different – claim 9 is narrower, because it requires use of a contiguous region of random access memory, while claim 10 does not. The Office Action asserts that use of a contiguous region of memory to hold pre-boot code for redirected I/O would have been obvious. The undersigned disagrees. Pursuant to M.P.E.P. § 2144.03, the Office Action's reliance on alleged common knowledge is hereby challenged. The Office must either withdraw the rejection or else support it with adequate evidence.

Claim 10

Claim 10 was rejected under Section 103 in view of the Matthews-Stu combination. As explained above, that combination is not properly motivated, and it teaches *remote* booting, not the claimed *local* innovations. The rejection should be withdrawn.

Claim 11

Claim 11 was rejected under Section 103 in view of the Matthews-Stu combination. As explained above, that combination is not properly motivated, and it teaches *remote* booting, not the claimed *local* innovations. The rejection should be withdrawn.

The Office Action fails to recognize and address the limitations that pre-boot code is read from the file "directly for execution" and that it is read "sector by sector". Limitations cannot be ignored. If there is no evidence they are taught by the art – and none is given here – then a claim containing them should be allowed.

Claim 12

Claim 12 was rejected under Section 103 in view of the Matthews-Stu combination. As explained above, that combination is not properly motivated, and it teaches *remote* booting, not the claimed *local* innovations. The rejection should be withdrawn.

Claim 12 depends from claim 11, and is therefore patentable for at least the reasons that claim 11 is patentable.

In rejecting claim 12, the Office Action asserts that use of non-contiguous disk sectors to hold pre-boot code that is read from a file on disk directly for execution would have been obvious. The undersigned disagrees. Pursuant to M.P.E.P. § 2144.03, the Office Action's reliance on alleged common knowledge is hereby challenged. The Office must either withdraw the rejection or else support it with adequate evidence.

Claim 13

Claim 13 was rejected under Section 103 in view of the Matthews-Stu combination plus Mary (posting to comp.os.ms-windows.ny.admin.misc). As explained above, the Matthews-Stu combination is not properly motivated, and it teaches *remote* booting, not the claimed *local* innovations. The rejection should be withdrawn.

The addition of Mary is also improperly motivated. The only basis given for including Mary is that "it would allow the user to boot multiple operating systems on the same computer." Office Action at page 7, paragraph 25. But Mary is not about adding more operating systems – it is about *removing* operating systems. The question addressed in Mary is "how do I uninstall nt server"? The rejection should be withdrawn.

Claim 14

Claim 14 was rejected under Section 103 in view of the Matthews-Stu combination plus Dalton (Windows NT Server 4: Security, Troubleshooting, and Optimization). As explained above, the Matthews-Stu combination is not properly motivated, and it teaches *remote* booting, not the claimed *local* innovations. The rejection should be withdrawn.

The addition of Dalton is also improperly motivated. No basis is given for combining Dalton with the other references. As explained at length above, the case law requires evidence in the art of a suggestion or motivation to combine references. The rejection should be withdrawn.

Claim 15

Claim 15 was rejected under Section 103 in view of the Matthews-Stu combination plus Bertram. As explained above, the combination of Matthews with Stu is not properly motivated; for at least that reason, the rejection should be withdrawn. As explained in connection with claim 2, the addition of Bertram is also improper.

In rejecting claim 15, the Office Action states "it is interpreted that other pre-boot code must be substituted for the standard loader code in order to boot the alternate operating system." This is apparently an interpretation of Bertram's teachings. However, the Office Action offers no

support for this interpretation. To the extent this is a reliance on alleged common knowledge, that reliance is hereby challenged under M.P.E.P. § 2144.03. To the extent this interpretation is based on Bertram, no supporting citation to language or figures in Bertram is given, so the interpretation is unfounded. The rejection should be withdrawn.

Claim 16

Claim 16 was rejected under Section 103 in view of the Matthews-Stu combination plus Bertram and Mary. As explained above, the combination of Matthews with Stu is not properly motivated. As explained in connection with claim 2, the addition of Bertram is also improper. The only basis given for adding Mary to that already improper mixture of references is that "the non-standard pre-boot code is what is used in the Matthews-Stu-Bertram system to load the alternate operating systems." Office Action at page 8, paragraph 31. However, there is no Matthews-Stu-Bertram system. Stu deals with remote booting, while Bertram does not mention remote booting.

Moreover, the Office Action fails to identify any teaching of the claimed "non-standard pre-boot code" in any of these four references. The rejection should be withdrawn.

Claim 17

Claim 17 was rejected under Section 103 in view of the Matthews-Stu combination plus Bertram. As explained above, the combination of Matthews with Stu is not properly motivated, and the addition of Bertram is also improper.

The Office Action asserts in paragraph 18 that Stu, Matthews and Bertram "teach the method and therefore teach the system performing the method." Although the Office Action would treat dependent claims of system claim 17 as if they did not differ from dependent claims of method claim 1, the differences between a system and a method cannot be ignored. This is particularly true when the system claim contains means-plus-function language, as claim 17 does. Claim limitations may not be ignored.

Moreover, the Office Action fails to address the "without a network connection" limitation of claim 17. Stu relies on having a network connection, since that is required for remote booting. The Office Action fails to give any credible reason why one of skill would have been motivated to take the remote-boot-over-a-network teachings of Stu and try to use them on a computer that does not require a network connection.

Furthermore, the Office Action fails to identify in any of these references a teaching of the claimed pre-boot code "which is distinct" from the operating system. The rejection should be withdrawn.

Claim 18

Claim 18 was rejected under Section 103 in view of the Matthews-Stu combination plus Bertram. As explained above, the combination of Matthews with Stu is not properly motivated, and the addition of Bertram is also improper.

Like claim 9, claim 18 requires use of a contiguous region of random access memory to hold the pre-boot code. As with claim 9, the undersigned challenges this aspect of the rejection pursuant to M.P.E.P. § 2144.03.

Claim 19

Claim 19 was rejected under Section 103 in view of the Matthews-Stu combination plus Bertram. As explained above, the combination of Matthews with Stu is not properly motivated, and the addition of Bertram is also improper.

Claim 19 requires use of at least two non-contiguous regions of random access memory to hold pre-boot code. To the extent this rejection relies on alleged common knowledge of such use, the rejection is challenged under M.P.E.P. § 2144.03. Lacking support, the rejection should be withdrawn.

Claim 20

Claim 20 was rejected under Section 103 in view of the Matthews-Stu combination plus Bertram. As explained above, the combination of Matthews with Stu is not properly motivated, and the addition of Bertram is also improper.

Moreover, the Office Action fails to recognize and address the limitation that the embodiment redirects floppy drive I/O to read pre-boot code from the file "without requiring a booted file system and a booted operating system." Claim limitations may not be ignored. The rejection should be withdrawn.

Claim 21

Claim 21 was rejected under Section 103 in view of the Matthews-Stu combination plus Bertram and Mary. As explained above, the combination of Matthews with Stu is not properly motivated, and the addition of Bertram is also improper.

Claim 21 is also patentable because it depends from patentable claim 17. Contrary to the assumption made in the Office Action, the method claims 1-16 have different limitations than the system claims 17-27, so it is insufficient to merely allege that the method is taught and hence the system is also taught. The rejection should be withdrawn.

Claim 22

Claim 22 was rejected under Section 103 in view of the Matthews-Stu combination plus Bertram and Dalton. As explained above, the combination of Matthews with Stu is not properly motivated, and the addition of Bertram is also improper. No basis was given for adding Dalton. Moreover, claim 22 is patentable because it depends from patentable claim 17. The rejection should be withdrawn.

Claim 23

Claim 23 was rejected under Section 103 in view of the Matthews-Stu combination plus Bertram. As explained above, the combination of Matthews with Stu is not properly motivated, and the addition of Bertram is also improper.

Moreover, the Office Action fails to recognize and address the limitation of substituting pre-boot code for standard NT loader code. The rejection should be withdrawn.

Claim 24

Claim 24 was rejected under Section 103 in view of the Matthews-Stu combination plus Bertram. As explained above, the combination of Matthews with Stu is not properly motivated, and the addition of Bertram is also improper.

Moreover, the Office Action fails to recognize and address the limitation of reading "a sector data structure that identifies sectors of the file that contains the pre-boot code." The rejection should be withdrawn.

Claim 25

Claim 25 was rejected under Section 103 in view of the Matthews-Stu combination plus Bertram. As explained above, the combination of Matthews with Stu is not properly motivated, and the addition of Bertram is also improper.

Also, the use of extended memory in Stu does not necessarily imply the claimed use of an extended memory manager. One use of a resource does not necessarily imply that multiple uses of that resource are managed.

Claim 25 is also patentable because it depends from patentable claim 17. The rejection should be withdrawn.

Claim 26

Claim 26 was rejected under Section 103 in view of the Matthews-Stu combination plus Bertram. As explained above, the combination of Matthews with Stu is not properly motivated, and the addition of Bertram is also improper.

Although the Office Action recognizes the limitation of caching pre-boot code, it then asserts without support that such caching is well known. The undersigned agrees that use of caching is well known *after* an operating system is booted and running. However, claim 26 pertains to pre-boot code which is being read "for execution by the processor prior to or in place of booting on the computer system an operating system which is distinct from the pre-boot code." Claim 17. The rejection is therefore challenged under M.P.E.P. § 2144.03.

Claim 27

Claim 27 was rejected under Section 103 in view of the Matthews-Stu combination plus Bertram and Feigenbaum (U.S. Patent No. 5307497). As explained above, the combination of Matthews with Stu is not properly motivated, and the addition of Bertram is also improper.

Furthermore, the reason given by the Office Action for adding Feigenbaum is based on error. The Office Action asserts that:

> Feigenbaum teaches that it is advantageous to load DOS into system memory first before booting the computer system [col. 1 lines 25-28]. It would have been obvious to one of ordinary skill in the art to modify the Matthews-Stu-Bertram system to load the entire operating system (more specifically DOS) into memory because Feigenbaum teaches that memory can be accessed much faster than a boot disk and would therefore inherently speed up the booting process [col. 1 lines 40-64].
> Office Action at page 9, paragraph 36.

However, the cited portion of Feigenbaum actually suggests storing portions of DOS in *ROM*, not in RAM. Feigenbaum, col. 1 lines 40-48. Feigenbaum considers the possibility of loading or copying DOS into RAM but decides against it because that would create two copies, one in ROM and one in RAM, which "would not be efficient use of memory nor acceptable by many users." Feigenbaum, col. 1 line 58 through col. 2 line 3. Feigenbaum teaches away from the invention, and away from the asserted combination of references.

Thus, apart from the fact that there is no proper Matthews-Stu-Bertram system, the rejection fails because it misunderstands Feigenbaum.

Claim 28

Claim 28 was rejected under Section 103 in view of the Matthews-Stu combination. As explained above, that combination is not properly motivated. The rejection should be withdrawn.

Claim 29

Claim 29 was rejected under Section 103 in view of the Matthews-Stu combination. As explained above, that combination is not properly motivated. For at least that reason, the rejection should be withdrawn.

The Office Action asserts that bootstrapping is well known. The undersigned agrees that bootstrapping as part of a normal boot process is well known. However, the claimed invention differs in various respects from a normal boot process, e.g., in its claimed I/O redirection limitations. The rejection is therefore challenged under M.P.E.P. § 2144.03.

Claim 30

Claim 30 was rejected under Section 103 in view of the Matthews-Stu combination plus Feigenbaum. As explained above, the combination of Matthews with Stu is not properly motivated, and the addition of Feigenbaum is also improper. The rejection should be withdrawn.

Claim 31

Claim 31 was rejected under Section 103 in view of the Matthews-Stu combination. As explained, that combination is not properly motivated, so the rejection should be withdrawn.

Claim 32

Claim 32 was rejected under Section 103 in view of the Matthews-Stu combination. As explained, that combination is not properly motivated, so the rejection should be withdrawn.

Claim 33

Claim 33 was rejected under Section 103 in view of the Matthews-Stu combination plus Mary. As explained above, the combination of Matthews with Stu is not properly motivated, and the addition of Mary is also improper. The rejection should be withdrawn.

Claim 34

Claim 34 was rejected under Section 103 in view of the Matthews-Stu combination plus Dalton. As explained above, the combination of Matthews with Stu is not properly motivated, and no motivation in the art was cited for adding Dalton. The rejection should be withdrawn.

Claim 35

Claim 35 was rejected under Section 103 in view of the Matthews-Stu combination plus Bertram. As explained above, the combination of Matthews with Stu is not properly motivated, and the addition of Bertram is also improper.

Moreover, no support was provided for the alleged obviousness of substituting other pre-boot code for standard NT loader code. The rejection is therefore challenged under M.P.E.P. § 2144.03.

Conclusion

This application is in condition for allowance. Prompt and appropriate action by the Office is hereby respectfully sought.

Although the undersigned believes this Response requires no fee, the Director is authorized to charge any fee or credit any overpayment in connection with this Response to Deposit Account No. 20-0100.

DATED this 30th day of September, 2004.

Respectfully submitted,

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